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Approved For Release 2002/09/03 : CIA-RDP78B04767A000300050026-4

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DECLASS REVIEW by NIMA/DOD

9 August 1968

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MEMORANDUM FOR THE RECORD

SUBJECT: KH-4 Test Program

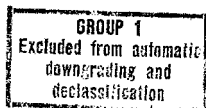
1. The purpose of this memorandum is to describe the present itinerary of tests and modifications planned for the KH-4 program. Following is a chronological list of variations in system configuration.

a. Mission 1104

(1) S0180: The last 800 feet of the forward camera film load on Mission 1104 will be S0180. S0180 (film type 8443) is an infrared aerial Ektachrome film. It is a three layer reversal color film sensitive in the near-infrared portion of the electromagnetic spectrum. In addition to being sensitive to the infrared, the film varies from normal color in the rendition of specific colors. Objects reflecting high in the infrared will be imaged as red, green is reproduced as blue, red objects in the ground scene will be green on the film, blue and neutrals will be reproduced as grey or neutral. The one exception to this order of color is that water is imaged as blue.

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(3) Night Photography Test: The original test plan of the KH-4B called for a partial load of film type 3401 on Mission 1104 for the purpose of a night photography experiment. Further research of films and processes now available revealed that film type 3400



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would be preferable for such an experiment. However, the schedule is now such that the night photography test has been postponed indefinitely. If and when that experiment is rescheduled, effected components within NPIC will be duly notified.

b. Mission 1105

(1) Film Type S0121 Test: Five hundred feet of S0121, three layer reversal color film will be attached to the tail of one of the two camera records (probably the forward) on Mission 1105.

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(2) S0380 Flight Film: Film type S0380, ultra thin base black and white film will constitute the prime film load in both cameras on Mission 1105. Film type S0380 emulsion is exactly like that of film type 3404. However, the thinner base of UTB provides for increased film loads. Mission 1105 will carry approximately 48,000 feet of main camera film compared to the normal 32,000 feet of type 3404. The thinner base of the film necessitated a hardware modification to facilitate film transport. For this specific mission, additional rollers were installed at the ends of the panoramic camera frame format. The result is an increase in the longitudinal dimension of the frames. The metering, however, has not been changed because that would constitute a major design modification, not warranted at this time. Therefore on Mission 1105 (only) the longer frame will intrude into the horizon camera format and will overlay the imagery by approximately 30 percent. The double exposure or overlap will occur at the terrain side of the horizon image vice the horizon arc side. The extended format area of the main cameras will be out-of-focus and will not provide any additional useable terrain coverage. The degradation associated with the overlap will be in the form of a weaker solution of horizon attitude. In addition, there will be no DISIC unit on Mission 1105.

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(3) Elimination of DISIC Unit: There will be no stellar or index camera on Mission 1105. Increasing costs for the units prompted the contracting office to eliminate that portion of the system on some KH-4B missions. The next KH-4B to be flown without a DISIC after Mission 1105 is Mission 1110.

(4) Extended Mission Life: Vehicle improvements will provide increased orbital life for all KH-4 missions beginning with Mission 1048, scheduled for September 1968. The normal mission life will be extended on Mission 1048 to 16 days, vice 14 days now normal. By Mission 1105, mission orbital life will be further increased to 18 days.

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2. In addition to the aforementioned camera and film oriented modifications, the original negative processing technique will be significantly modified for KH-4 photography beginning with Mission 1104. The conventional spray, interrupted, three level process used over the years to process KH-4 main camera film, will be abandoned in favor of a new single level, dual gamma, viscous process. NPIC performed an evaluation of film processed by this technique in December of this year (Cable - OUT 63922) and concluded that "in general, the dual gamma product is preferred over the product of the interrupted Trenton processed film".

3. All the foregoing modifications and tests are tentative and subject to change. The current plan is described herein to provide adequate lead time for all components to prepare for the modifications, assuming adherence to the schedule. Further details on any or all of the present plans is available through NPIC/TSSG/TAD.

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Chief, Technical Analysis Division
NPIC/TSSG

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